

# Transportation

# 5

## **1. Introduction**

The Town of Barrington's transportation network is an important factor influencing the community's development patterns and overall quality of life. The purpose of transportation planning, and this section of the master plan, is to proactively address transportation issues brought on by residential and commercial growth in the community. From the issues identified, an analysis was made of existing transportation systems, planned projects, general roadway conditions, existing and future traffic capacity trends, potential alternative transportation modes, and local design requirements in terms of meeting the community's goals for transportation and circulation.

The primary focus of this transportation assessment is the identification of important local and regional issues and opportunities to enhance and diversify the transportation network through expansion, maintenance, land use regulations and policy. Trends and statistics are evaluated regarding local and state roads (traffic volumes, travel patterns, safety issues), housing distribution, roadway conditions, and alternative travel opportunities.

In order to obtain data and information for this chapter, several sources were used including the New Hampshire Department of Transportation, Strafford Regional Planning Commission (SRPC), and the Town of Barrington Administrator's Office, Planning Board Office, Police Department and Highway Department. Additionally, previous local studies and reports were used for this assessment.

Through these sources as well as public workshops, interviews with local and regional officials, and the assistance of the Master Plan Steering Committee (MPSC), major transportation issues affecting Barrington's existing and future quality of life, and capacity to accommodate new development were identified.

## **2. Summary of Major Findings**

How people and goods move from one place to another is a fundamental issue when planning and managing growth in Barrington. As a community continues to attract new commercial and residential development, adequate transportation infrastructure and services must be provided. The following points summarize the transportation issues and conclusions presented within this chapter. Additionally, various implications (particularly regarding future land use policy) associated with Barrington's transportation trends are discussed.

- Barrington's road network is comprised of state and local arterials, collectors, and minor roads. In all, there are approximately 111 miles of public roads and 50 miles of private roads in the community. The vast majority of these are local roads subject to regular maintenance by the town. The local road system is made up primarily of sub-collectors and residential access roads.

<b>Table 5-1 Barrington Transportation Facts</b>	
Town Roads (Class V & VI)	119 roads totaling approximately 94 miles
State Routes	Routes 125, 9, and 126
Federal Routes	Routes 4, 202 and 202A
Private Roads	109 roadways totaling Approx. 50 miles
Nearest Interstate Exit Distance	Spaulding Turnpike, Exit 12, Approximately 9 miles
Railroad	No passenger and freight service
Public Transportation	Paratransit Service provided by COA
Nearest Regional Airport	Skyhaven Airport, Rochester
Nearest Commercial Airport	Pease Airport about 16 miles
Source: Town of Barrington	

- Barrington has a significant amount of locally maintained public roadways in comparison to other communities in the region of similar size and population.
- About 12 miles (or 17%) of locally maintained roads are non-paved (dirt or gravel). There are several issues that need to be considered when considering improvements to these roadways such as short and long-term cost/benefits, existing and projected traffic volumes, emergency access, and aesthetic quality and impacts.
- Barrington has a limited amount of state and federal highway mileage among Routes 4, 9, 125, 126, 202, and 202A. Route 125 serves as the major connector to inter-regional highway systems including Route 16 (The Spaulding Turnpike) which serves Northern New Hampshire; Route 4 serving as a major east-west connector from Portsmouth to Concord; and Route 101 serving as a major east-west connector between the seacoast and Manchester. Consequently, a significant amount of interstate and inter-regional traffic flows through the community on a daily basis.
- Beyond the local and regional highway system, other forms of regional transportation such as bus, air and rail have not been a major factor in moving people or goods in and out of Barrington.
- Over 85% of working residents commute out of town for employment and the vast majority of them drive alone. Public transportation options are very limited in Barrington with no fixed route bus service, private interstate bus service, or independent human service programs. Like many rural/suburban communities, Barrington has difficulty in justifying regular fixed-route public transportation.
- There are no sidewalks or formally designated bikepaths in Barrington yet several Class VI roads create a broad network of trails used for recreational purposes. Walking is a key function in certain areas of town and retaining these opportunities through un-maintained roads is an important consideration when planning for transportation improvements.

- Traffic volumes have steadily risen on both major and minor roads throughout the community. This trend is expected to continue as residential development increases, particularly in the central and southern areas of town.
- Since 2000, 500 accidents were recorded on Barrington roads, and nearly 40% have involved personal injury. Most accidents occurred on the Route 125 corridor - about 25% of the total. On an annual basis accidents have declined slightly over the past three years.
- As development throughout town continues a number of local roads such as Beauty Hill Road and Green Hill Road are becoming heavily used as collector roads. Several enter major arterials such as Routes 4, 9, 125 and 202 at unsignalized intersections. There are growing safety and sufficiency issues at these intersections such as high speed and limited gaps on the arterials, limited sight distance, poor intersection geometry, and varying road surfaces.
- The town has a good network of roadways that has the potential to distribute traffic very efficiently. However, there are several Class VI roads that are not fully accessible and create barriers in this network. As development continues, the importance of improving internal connections and circulation by reconstructing or maintaining key Class VI roads to town standards will grow.
- Barrington's road design standards are well thought out, ensure that new roads and intersections are safe and well constructed, and, generally, consistent with the rural character of the community. However, there may be some opportunity to revise requirements slightly based on lower projected traffic volumes and to ensure consistency with the community's desire to remain rural.
- There are several Class VI and private roads that are difficult to access due to maintenance and/or design issues that are a hindrance for emergency response and limit traffic distribution and circulation.
- All major roadways in Barrington including Routes 4, 9, 125, 126, 202 and 202A are included in the Highway Business zoning district. This type of linear strip zoning raises several potential aesthetic and safety concerns. In order to improve the efficiency, capacity, safety, aesthetics, and economic opportunities on the corridor, several upgrades and improvements should be considered. These include measures such as improving and coordinating private curb-cuts and upgrading intersections with poor safety or LOS (level of service) records. Also, improving sidewalks, bicycle networks, signage requirements and streetscape enhancements are also important considerations.

### **3. Local Commuting Patterns**

Over 85% of working residents commute out of town for employment opportunities (See Table 5-2). While this is a significant amount, it actually declined during the 1990s as more residents found jobs in Barrington. (The number of people that worked in town rose from 9.9% in 1990 to 14.1% in 2000). Barrington residents and workers rely heavily on their automobiles for daily

needs and employment opportunities. A large percentage (93.3%) of working residents commute to work by car, and most of them drive alone.

The high percentage of residents that commute is attributable to a combination of factors: a fairly limited local employment base; a high percentage of jobs in several business sectors located within 20 miles; and the unavailability of public transportation in town. Not only do Barrington workers rely heavily on their automobiles for employment, but the travel time to work is also fairly lengthy. On average, the Barrington commuter is driving nearly 28 minutes to get to work. Being one of the more rural areas of Strafford County, travel time to work is longer for Barrington than many other residents in the region on average.

Table 5-2 Barrington Commuting Patterns 1990 and 2000				
COMMUTING TO WORK	1990	%	2000	%
Workers 16 years and over	3,321	100%	4,192	100%
Worked in New Hampshire	3,004	90.5%	3,779	90.1%
Worked in Barrington	329	9.9%	589	14.1%
Worked in County but not in Town	1,595	48.0%	1,772	42.3%
Worked Outside Strafford County	1,080	32.5%	1,418	33.8%
Worked Outside New Hampshire	317	9.5%	413	9.9%
MEANS OF TRANSPORTATION				
Car, Truck or Van	3,139	94.5%	3,912	93.3%
Drove alone	2,520	75.9%	3,467	82.7%
In carpools	619	18.6%	445	10.6%
Using Public Transportation (Bus)	28	0.8%	42	1.0%
Bus	28	0.8%	36	0.9%
Commuter Rail	0	0.0%	6	0.1%
Bicycle	6	0.2%	47	1.1%
Walked	29	0.9%	29	0.7%
Other Means	19	0.6%	15	0.4%
Work at Home	100	3.0%	194	4.6%
TRAVEL TIME TO WORK				
Not Working At Home	3,221	97.0%	3,998	95.4%
Less than 5 Minutes	19	0.6%	34	0.9%
5 to 9 Minutes	153	4.8%	238	6.0%
10 to 14 Minutes	412	12.8%	390	9.8%
15 to 19 Minutes	344	10.7%	613	15.3%
20 to 24 Minutes	844	26.2%	781	19.5%
25 to 29 Minutes	270	8.4%	379	9.5%
30 to 34 Minutes	323	10.0%	624	15.6%
35 to 39 Minutes	171	5.3%	140	3.5%
40 to 44 Minutes	162	5.0%	178	4.5%
45 to 59 Minutes	310	9.6%	299	7.5%
60 to 89 Minutes	136	4.2%	243	6.1%
90 or More Minutes	77	2.4%	79	2.0%
Mean Travel Time to Work (Minutes)	27.7			
Source: U.S. Census Bureau				

#### 4. Local and Regional Highway Network

Barrington was historically connected to other communities through a system of agricultural range roads and trails. As communities transitioned from agriculturally oriented economies to other types of industries and over the past 20 or more years, much of the formerly cultivated

lands have been converted to residential subdivisions or other types of development. However, many rural communities, including Barrington, have continued to rely on the older network of local roads to connect them to employment centers and service areas. The increased traffic and usage of these older roads have had a significant impact on the provision of local services as well as highway maintenance costs.

## Regional Public Roadway Comparison

Compared with other municipalities in the region, Barrington has a relatively high amount of public road mileage. For example, Barrington has over 16 more public road miles than the average nearby community, and more public road mileage than Lee, Madbury, and Durham – a town with nearly twice the population of Barrington. Much of this can be explained by the geographic size of Barrington (one of the largest land areas in the County). The rural landscape is illustrated in Table 5-3 by the relatively low “persons per mile of roadway” and “miles of roadway per square mile”.

<b>Municipality</b>	<b>2000 Pop.</b>	<b>2000 Housing Units</b>	<b>Land SQ Miles</b>	<b>2002 Public Road Mileage</b>	<b>Persons per Land Sq. Mile</b>	<b>Homes Per Land Sq. Mile</b>	<b>Homes per Road Mile</b>	<b>Persons per Mile of Road</b>	<b>Road Miles per SQ Miles</b>	<b>Median Travel Time to Work (Min.)</b>
Barrington	7,475	3,147	46.7	110.8	160.1	67.4	28.4	67.5	2.4	27.7
Lee	4,145	1,534	20.0	62.7	207.3	76.7	24.5	66.1	3.1	26.4
Rochester	28,461	11,836	44.4	185.6	641.0	266.6	63.8	153.4	4.2	23.7
Dover	26,844	11,924	26.7	155.0	1005.4	446.6	76.9	173.2	5.8	21.4
Madbury	1,509	534	11.5	30.3	131.2	46.4	17.6	49.8	2.6	24.2
Durham	12,664	2,923	22.4	82.1	565.4	130.5	35.6	154.2	3.7	17.1
Nottingham	3,701	1,592	46.5	76.9	79.6	34.2	20.7	48.1	1.7	33.8
Northwood	3,640	1,905	28.1	53.2	129.5	67.8	35.8	68.5	1.9	33.5
Strafford	3,626	1,564	49.0	93.3	74.0	31.9	16.8	38.9	1.9	36.6
<b>Region Average</b>	<b>10,229</b>	<b>4,107</b>	<b>32.8</b>	<b>94.4</b>	<b>332.6</b>	<b>129.8</b>	<b>35.6</b>	<b>91.1</b>	<b>3.0</b>	<b>27.2</b>

*Source: NH Dept. of Transportation*

In conjunction with local and state officials, the following inventory of the existing transportation network has been assembled. Problem areas have also been identified with the assistance of local officials based on capacity issues, intersection geometry, accident data, and surface conditions to the extent that this information is available.

## Highway Classifications

New Hampshire’s highway classification system can be divided into two broad categories – administrative and functional.

**Administrative Highway Classifications** - The administrative classification system assigns governmental responsibilities for construction and maintenance purposes. The highway network is comprised of six classifications as defined by the New Hampshire Department of Transportation (NHDOT) and shown in the Table 5-4.

<b>Table 5-4 N.H. Highway Classifications System</b>	
<b>Class</b>	<b>Description</b>
I	Existing or proposed highways on the primary state highway system.
II	Existing or proposed highways on the secondary state highway system.
III	Recreational roads leading to, and within, state reservations designated by the legislature
IV	Highways with the compact sections of designated municipalities (not applicable to Barrington)
V	All other town maintained roads
VI	All other public ways, including closed roads and roads not maintained in condition suitable for travel for five or more years
Source: NH Dept. of Transportation	

Class I, II, III highways are those controlled and maintained by the New Hampshire Department of Transportation. Class IV, V, and VI highways are controlled by local municipalities. Of the six classifications, only four are found in Barrington including Class I, II, V, and VI.<sup>1</sup> According to NHDOT there are a total of 110.77 miles of public roadway in Barrington. Of these, 24.70 (or 22%) are state roads.

**Class I Highways** – There are four Class I Highways in Barrington for a total of 11.36 miles including:

- Route 4
- Route 9
- Route 202A
- Routes 202/9

These roads are maintained by the state as part of the federal-aid primary system and carry a significant amount of local and regional traffic to areas throughout the Seacoast as well as other regions of the State.

**Class II Highways** - These roads are primary and secondary highway classes defined by NHDOT according to whether a road is considered to be major or minor in terms of the amount of population served by it. Class II highways in Barrington include Route 125, Route 126, and Route 202. There is a total of 13.34 miles of Class II road in town with Route 125 and Route 202 serving as the main north-south transportation corridors in the community. The Route 125 corridor is a critical link in the highway system of the Seacoast Area. A substantial amount of inter-regional traffic moves through Barrington along this corridor everyday. It is also the major connector to Route 4, which carries inter-regional traffic from east to west.

<sup>1</sup> A full list of all roadways and classifications in town is contained in the Town of Barrington Master Plan Technical Update, 2002.

- ✓ **INSERT FRONT MAP 5-1   Barrington Transportation & Circulation Map:  
Existing Conditions & Issues**

**INSERT BACK MAP 5-1 Barrington Transportation & Circulation Map: Existing Conditions & Issues**



Class V Highways – There are 91 locally-maintained rural highways in Barrington representing approximately 68 miles. Class V highways make up the majority of road mileage in Barrington (approximately 61%). While 79 of these roads totaling about 58 miles are paved, another 12 roads and 10 miles have dirt or gravel surfaces. Other than regular grading, minor repairs and general maintenance, no improvements are currently planned for these roads.

Class VI Highways – These are un-maintained public roads, which may include highways that have been discontinued, subject to gates and bars, and those that have not been in suitable condition for travel over the last 5 years. There are 28 roads or sections of roads designated Class VI in Barrington totaling just over 26 miles.

Private Roads – There are 109 private roads and rights-of-way in Barrington totaling approximately 50 miles. Most of these roads serve seasonal homes along lakes and ponds, while others serve individual properties or are approved streets as part of subdivision plans that have not yet been accepted as public roads.

Scenic Roads – These are specially designated local roads (by vote at Town Meeting) other than Class I and II highways, where the repair, maintenance, reconstruction, or paving must not involve the cutting or removal of trees, or the destruction of stone walls except by approval of the Planning Board. In Barrington there are currently three Class V roads designated as scenic including Old Canaan Road, Back Canaan Road, and Cooper Hill Road.

Class B Trails – The town recently adopted France Road Extension and Tibbetts Road as Class B Trails. Both roads access the Tamposi property and have previously been Class VI highways. They are an important extension of Barrington's recreational trail system.

**Functional Highway Classification** - Roads in Barrington can be broadly organized into three functional categories based on traffic mobility and land access including arterials, major collector roads, and minor (or local) collector roads.

Arterial Roads – These networks of continuous routes generally move large volumes of traffic at relatively high speeds with limited access points. In Barrington, NH Route 125, US Route 4, NH Route 9, US Route 202, US Route 202A, and NH Route 126 are all classified as arterial roads.

Major Collectors – These roads serve a dual function. The primary purpose is to feed traffic from local roads onto arterials, and the secondary and subordinate purpose is to access adjacent land uses. In Barrington there are 13 roadways designated as major collectors including the following:

- Tolend Road
- Second Crown Point Road
- Ham Road
- Hall Road
- France Road
- Green Hill Road
- Scruton Pond Road
- Beauty Hill Road
- Young Road

- Pond Hill Road
- Smoke/Brewster Road
- Province Road/Cate Road
- Wood Road

Minor (or Local) Collectors – These roads comprise the remainder of roads in Barrington. The primary function of local roads is to provide direct access to adjacent land uses with little mobility between locations. These roads are generally smaller than major collector roads.

Local collector roads can be divided into subcategories such as minor streets and lanes. Based upon these qualitative definitions, this system, along with the administrative classifications, provide a means of identifying roadway sections for maintenance and improvement projects. In addition, the Planning Board and Road Agent can establish standards for street construction.

### Local Roadway Surfaces

A significant amount of the roadway mileage in Barrington is unpaved (See Table 5-5). Of the 68 miles of town-maintained roadway (Class V) about 12 miles (or 18%) are constructed of non-paved surfaces such as gravel or dirt. In addition, the Class VI roadways (not maintained by the town) add another 28 miles of gravel or dirt roads to the total.

Unpaved roads that service less populated residential and agricultural areas are a major feature of the rural character of Barrington. However, as traffic increases as a result of residential development on some of these smaller roadways, more wear and tear occurs resulting in extended maintenance responsibilities. There are also concerns by local officials regarding emergency access and response time as more seasonal homes are converted to year-round homes on narrow and unpaved roads.

Table 5-5 Class V Road Surfaces, 1995 and 2002		
Surface Type	1995	2002
Paved & Surface Treated	45.43	58.00
Gravel	11.98	12.00
Graded & Drained	2.55	0.00
Scenic Designation	2.83	3.50
Source: Barrington Road Agent		

A Pavement Management Plan was developed in 1994 to assist the town in maintaining local roads and planning for necessary maintenance and improvements. The Highway Department has been updating the plan and conducts an annual assessment of roadway conditions. The Department targets four to five roads for improvements annually as the budget allows. Under this program, the town gives the poorest quality roads serving the most traffic the highest priority.

### Bridges

There are several small bridges within the community and the town is responsible for maintaining those located on Class V roads including the following.

- Province Road (Mt. Misery section) over Nippo Brook
- Woods Road over an unnamed brook
- Green Hill Road over the Isinglass River

- Mallego Road over Mallego Brook

These bridges are inspected annually by the town Road Agent and biennially by the NHDOT Municipal Services Division. In general, all of these bridges are in satisfactory condition. As the bridges require maintenance, they are placed on the annual work program. Since 1995, the Woods Road Bridge has been tarred and guardrails have been added. No changes have been made to the other three bridges. The Province Road bridge and the Mallego Road bridge are both still in need of guardrails.

## **5. Traffic Volumes & Circulation**

The structure of Barrington's highway network requires local and regional travelers to share the major arterials in town to a large degree. Local traffic consists mainly of trips from residential areas in Barrington to businesses and services concentrated in surrounding communities. The combination of local and inter-community trips generates substantial turning movements, primarily along the Route 125 Corridor and at peak traffic hours.

NHDOT maintains six permanent traffic volume counters in the Strafford Planning Region to monitor regional traffic volume trends. The closest permanent counter to Barrington is located in Lee on Route 125, north of the traffic circle.

### **Average Daily Volume**

Both NHDOT and the Strafford Regional Planning Commission (SRPC) have conducted traffic counts in Barrington over the past several years. Since 1991, increased residential (year-round and seasonal) and commercial development in town and the region has led to increased traffic on Barrington's roadways. Table 5-6 lists the Permanent Traffic Recorder counts conducted by NHDOT between 1991 and 2000. These counts indicate a 27% increase on Route 125 just south of town and 20% on Route 4 east of Route 108.

SRPC also records traffic at non-permanent locations in the region including Barrington. In some instances, the data may be the result of private consultant traffic counts conducted for a specific development proposal. Recorders are usually left in place for one week. Non-permanent traffic volume recorders placed in Barrington since 1991 are listed in the Table 5-7.

Not surprisingly, the busiest roadway in Barrington is Route 125. Both permanent and non-permanent traffic counters show the volumes of daily traffic to consistently be between 13,000 and 14,000 vehicles per day according to the most current data (1999). The steady traffic flow and high volumes compared to other local roadways indicates a significant amount of through traffic using the corridor on a daily basis.

**Table 5-6**  
**Traffic Volumes in Barrington Area**

Route	Year	Traffic Volume	% Change in 1991-2000
Dover Point Rd at the White Mt. Highway (Rt. 16)	1991	14,596	2%
	1992	17,231	
	1993	17,077	
	1999	14,669	
	2000	14,829	
Little Bay Bridge	1991	52,272	28%
	1992	62,493	
	1993	66,172	
	1999	69,628	
	2000	72,753	
US 4 east of Rt. 108	1991	15,136	20%
	1992	18,823	
	1993	19,397	
	1999	19,373	
	2000	18,951	
NH 125 north of Lee Circle	1991	10,179	27%
	1992	12,437	
	1993	10,794	
	1999	13,761	
	2000	13,860	
Spaulding Turnpike at Rochester Toll Plaza	1991	23,251	38%
	1992	29,157	
	1993	30,535	
	1999	35,603	
	2000	37,722	
	1991	15,103	36%
	1992	19,192	
	1993	20,113	
	1999	22,656	
	2000	23,617	

Source: New Hampshire Dept. of Transportation

According to accepted standards for the region, traffic volume increases of 1% to 3% annually are anticipated. Using this standard, traffic volumes have increased significantly in certain areas of Barrington such as Green Hill Road and Route 125, and steadily in other locations such as north of Lee Oak and Route 9 throughout town. These numbers reflect the strong increases in residential development over the past decade and the reliance on the automobile by local residents for commuting to work and shopping opportunities. Of particular note is the high growth in year-round and seasonal home development in the southern portion of Barrington, which has had a direct impact on the higher traffic levels in this area of the community over the past 10 years.

#### **Weekday/Weekend and Seasonal Traffic Variation**

Like many smaller, suburban communities, Barrington's weekday traffic volumes tends to be higher than weekends as local residents are commuting to other areas for work. Table 5-8 illustrates weekday traffic volumes in the community.

Table 5-7 Average Weekday Traffic Counts: Non Permanent Recorders, Barrington 1990-1999							
Traffic Count Location	ID #	1990	1991	1992	1996	1997	1999
NH 9 @ Madbury TL	027053	6,720	6,844	7,086	6,616	7,614	7,403
Green Hill Road over Isinglass River/east of US 202	027066			1,010	1,398		1,759
NH 125/Beauty Hill Rd.	027064				15,235		13,674
NH 125 S of NH 9	027055			12,911	15,101		17,382
NH 202A at Rochester TL	027052		2,316				2,212
NH 126 at 9/202		2,181	2,149				
NH 125 north of Lee Oak/ (1999) North of Beauty Hill Road				11,623			13,674
NH 9 west of NH 125	02756	6,349	7,106	6,355			7,473
Sources: NH Dept. of Transportation, SRPC							

Traffic volumes also vary over the course of a year in Barrington with peaks in the summer when seasonal residents flock to local lakes and ponds, and tourists to the White Mountains (See Table 5-8). In fact, the only time of year when Saturday traffic volumes exceed weekday volumes on Route 125 is between July and September. According to local officials, Route 125 is used as a major north-south connection from Massachusetts and Southern New Hampshire to Route 16 and the White Mountains.

Table 5-8 Seasonal Traffic Variations on Route 125 at Lee ATR in 2001							
Month	Route Number	Avg. Sun.	Avg. Weekday	Avg. SAT	Adjusted Avg. Day	Computed Total Veh.	Gain/Loss
Jan	NH125	9,524	12,220	10,807	11,690	362,375	4.8%
Feb	NH125	9,317	12,703	12,077	12,130	339,640	NA
Mar	NH125	10,978	12,495	11,818	12,190	377,887	NA
Apr	NH125	Station Did Not Operate					NA
May	NH125	12,475	14,382	14,670	14,173	439,366	0.2%
Jun	NH125	13,578	15,493	15,049	15,163	454,886	NA
Jul	NH125	15,011	15,749	16,250	15,695	486,530	3.2%
Aug	NH125	15,976	15,989	16,287	16,026	496,796	5.5%
Sep	NH125	13,904	14,780	14,992	14,669	440,074	1.8%
Oct	NH125	13,295	14,893	14,692	14,661	454,497	5.1%
Nov	NH125	8,993	19,965	12,303	17,480	524,413	NA
Dec	NH125	10,284	13,245	12,956	12,721	394,341	5.3%
NA – Data Not Available							
Source: NH Dept. of Transportation							

## 6. Sufficiency and Safety Issues

Roadway safety is determined by a number of factors such as road condition, traffic volume and speed, the number of access points and intersections, driver behavior, and vehicle condition. They all create the potential for accidents. Highway traffic accident data is used to identify hazardous situations and plan for necessary improvements.

## Accident Records

NHDOT and the Barrington Police Department record traffic accidents in town. Since 2000, these records show that a total of 500 accidents took place in town. Nearly 25% of them occurred along the Route 125 corridor.

<b>Table 5-9 Town of Barrington Accident Reports Since 2000</b>						
<b>Year</b>	<b>Injury Accident</b>	<b>Fatalities</b>	<b>OUI Involved</b>	<b>Pedestrian</b>	<b>Bicyclists</b>	<b>Total No. Of Accidents</b>
2000	46	0	5	0	0	161
2001	65	0	6	2	1	143
2002	65	0	5	1	0	141
2003*	13	0	0	0	0	55
<b>Total</b>	<b>189</b>	<b>0</b>	<b>16</b>	<b>3</b>	<b>1</b>	<b>500</b>
Source: NHDOT, Barrington Police Department						
* 2003 Accidents are from January through April						

While the majority of accidents in Barrington over the past several years have been minor in nature with only property damage reported, there are a growing number involving personal injuries and fatalities. While supporting documentation is sketchy, interviews with local emergency personnel suggests that more severe accidents (those involving injury and fatalities) are largely attributable to high-speed traffic on major arterials, such as Routes 4 and 125, and local traffic entering the highway at several unsignalized intersections.

The highest percentage of accidents in Barrington occurs on the Route 125 corridor. According to local officials, recent vehicle speed monitoring by the state determined the average speed was in excess of 65 mph in certain sections of the corridor. It is speculated that Route 125 intersections are becoming so busy at certain times of day that drivers on side streets take chances to get out onto the road. Additionally, there is a wide variety in the type of vehicles including many trucks going through town to commercial and industrial facilities located in Rochester.

According to the data over the past 10 years accidents have decreased slightly overall. The Route 125/Route 9 intersection showed the greatest decrease in recorded accidents following its signalization, re-grading and realignment in 2001. However, certain locations such as Route 202 (from Route 126 to Green Hill Road) have picked up in recent years. Accidents recorded on Route 125 south of the Route 9 intersection have been attributed largely to high speeds, numerous curbcuts with unprotected turning movements, and poor visibility at some intersections.

It is difficult to determine the reasons for the fluctuation in recorded accidents since 1990. It appears that as improvements were made to the state highway system accidents levels dropped accordingly. However, as more traffic builds on major highways and daily trips increase with residential development along collector roads that feed these highways at various intersections

(resulting in more unprotected turning movements to and from the roadway), the potential for traffic conflicts increase.

In general, the locations where multiple accidents are prevalent in Barrington occur on state-maintained roads. NHDOT analyzes the data as part of internal department studies for state highway projects, and the Barrington Police Department uses the data to encourage NHDOT to improve sections of state roads where there are frequent accidents.

### Intersections of Concern

Local officials have identified a number of intersections in Barrington as problematic as listed in the Table 5-10.

<b>Table 5-10</b> <b>Intersections of Concern in Barrington</b>	
<b>Intersections</b>	<b>General Assessment</b>
Route 125 & Beauty Hill Road	High speed and poor site distances
Route 125 & Old Province Road	High speeds and limited gaps in traffic
Route 125/Scuton Pond Rd./Substitute Rd.	High speeds and limited gaps in traffic
Route 125/Green Hill Road/Tolend Rd.	High speeds and limited gaps in traffic
Oak Hill Road & Route 9	High speeds and limited gaps in traffic
Route 9 & Young Road	Poor site distances and geometry
Pond Hill Rd & Route 202A	Poor site distances and geometry
Routes 9/202/4	Poor site distances and geometry
Routes 126 & 202	Poor site distances and geometry
Routes 126 & 9	High speeds and limited gaps in traffic
<i>Source: Interviews with Police, Fire, Ambulance and Highway Officials</i>	

Several intersections currently consist of gravel Class V roads intersecting a state Class I or II highway. Some of these intersections were highlighted in the 1995 Master Plan as in need of upgrades in order to improve safety and turning movements. Included are: Pierce Road at junction with Route 125; Canaan Road at Route 202; and Warren Road at Route 4. No upgrades to these intersections have been made since 1995.

## 7. Alternative Transportation Opportunities

### Airports and Air Service

The nearest major commercial airport is the Pease International Tradeport located in Portsmouth, New Hampshire about 16 miles from Barrington. The Skyhaven Airport, located in Rochester, is a regional facility about 9 miles from town. This general aviation airport has a 4,000-foot runway, navigational lights and instruments, and generally services recreational flyers and private commuters. Several improvements are planned for the facility and a number are included in the State's 10-Year Transportation Improvement Plan. Air travel at present is a relatively minor economic factor and means of access in Barrington. However, continued and planned expansions at both Pease and Rochester facilities could significantly improve access to the Seacoast Area.

**Railroads**

There are no active rail lines located in Barrington. Regionally, the Boston & Maine Corporation operates rail freight lines in the Seacoast Area. In 2001, commuter rail began in the region (the Boston-Portland DownEaster) with station stops at Dover, Durham and Exeter. It is not currently known how many Barrington residents are using passenger rail service. However, the 2000 Census indicated that just over 400 (about 10%) Barrington residents commute to work outside of New Hampshire, which could be a source for local ridership.

**Bus and Taxi Service**

Since 1983, the Cooperative Alliance for Seacoast Transportation (COAST) has provided public bus transportation within the region. There is currently no fixed route service in Barrington and COAST has no foreseeable plans for expansion into the community. Like many rural communities, Barrington cannot demonstrate the feasibility of fixed route bus service given the population base, wide distribution of homes, and general independence of commuters.

C&J Trailways operates private bus service from Portland, Maine to Dover and Boston with stops at Pease International Tradeport, Newburyport, Logan Airport, and South Station in Boston. The Dover terminal is approximately 15 minutes from Barrington and provides an ample area for short and long-term parking. This service provides local residents with an alternative means to travel to Boston.

There is also limited taxi service provided in Barrington by private companies located in Rochester, Dover and Durham. Transportation is available on demand and service is provided on a 24-hour-a-day basis.

**Para-Transit Service**

Regional social services agencies within Strafford County provide paratransit services to the elderly and disabled who cannot use fixed route bus service. Special transit service is also available in Barrington on a limited basis by the Strafford County Community Action Program, an organization that provides services to residents needing medical care.

**Rideshare Facilities**

There are currently eight NHDOT maintained “Park and Ride” lots in the seacoast area and two are located in Barrington. A 20-space lot is located near the southwest corner of the Route 125/Route 9 intersection and another 25-space lot is located at the Sugar Shack on Route 4. There is also a nearby 25-space lot located at the St. Joseph’s Church in Northwood at the intersection of Routes 202/9 & 4.

As part of the State’s “Park and Ride” program, NHDOT operates a Rideshare program that maintains a list of individuals interested in participating in a car pool or van pool. At present this program receives limited staff and marketing resources due to budget constraints.



## **Port Facilities & Services**

The Port of New Hampshire, located on the Piscataqua River in Portsmouth, is the only deep-water port in the State. There are no passenger services maintained at this facility, but it does provide facilities for commercial cargo.

With close proximity to Interstate 95 and direct service from rail lines, the Port and Pease can provide an intermodal transportation link for shipping and receiving cargo. Although this may not provide a significant direct opportunity to Barrington residents, such nearby facilities may be an important factor in maintaining existing businesses or attracting new businesses to the community.

## **Trucking**

Routes 4 and 125 are major corridors for truck distribution in and out of the region. Most Barrington businesses use trucks to bring their raw materials or products into the area, to distribute goods locally, and to ship products out to markets in New England and beyond. There are several trucking and distribution companies located in the region that service the transportation needs of Barrington businesses.

## **Sidewalks & Pedestrian Access**

There are no public sidewalks presently in Barrington. Crossing busy roads in town can be difficult due to high volumes, speed, and limited gaps in the traffic. While the posted speed limit through the community ranges from 30 to 55 mph, travel speeds tend to be higher on the major arterials including Routes 4, 9, and 125.

Safe pedestrian movement within the community and good connections to public spaces such as schools and parks are fundamental transportation needs in Barrington. Streets and intersections where there is high pedestrian activity should be evaluated carefully to identify potential dangers to pedestrians and effective design solutions. Some potential traffic calming devices that may be appropriate for the Town in given areas include effective signage, street trees, and contrasting crosswalk materials and colors.

## **Bicycle Transportation**

There are no formal bicycle paths in Barrington yet recreational biking is very popular throughout the community. The scenic quality of existing roadways (particularly Class VI Highways) in town for bike use is very high. There are no designated bike lanes along the major arterials in town including Routes 125, 4, 9 and 202 yet they are some of the most popular bicycling routes in Barrington. However, with the amount of vehicle traffic and turning movements, these corridors are not friendly for bike riders. A designated network of bicycle paths or lanes along major roads would greatly enhance rider safety and use. In order to facilitate this network, Barrington will have to work closely with SRPC and NHDOT, which is responsible for State routes and design changes on these corridors. The Bicycle Compatibility Index (BCI) developed by the Federal Highway Administration should be used to determine which roads in Barrington are most suitable for designated bike routes.

## Trails and Paths

There are a multitude of trails and paths in Barrington serving a variety of uses including walking, hiking, mountain biking, cross-country skiing, all terrain vehicles and snowmobiling. However, much of this network is informal and privately owned with no secured agreements for continued use.

Passive recreational uses, primarily walking paths and trails, are highly desired by local residents. As part of the process in developing the *Open Space, Recreation & Town Center Plan, December 2001*, the town identified potential corridors for various types of pathways for passive and unstructured recreational uses. However, these corridors can also be an effective means of alternative transportation. An important underlying theme in developing a local trail system is connecting key local cultural, social and natural attributes. Creating a trail plan in Barrington should aim to accomplish several community goals such as providing an alternate means of transportation, new recreational amenities, and fulfilling limited economic opportunity for ecotourism.

## 8. Roadway Improvements & Maintenance

Many local roads were constructed long ago and predate today's design requirements of the town. In most cases, these narrower roads with non-paved surfaces work well, particularly where there is limited residential use and development potential. However, some roads have become more heavily used as collectors, and their narrow width and minimal base construction has required substantial improvements by the town.

In addition to state-funded projects listed on the Transportation Improvement Program (TIP), the town evaluates the local road network on an annual basis to establish priorities for maintenance, safety, and capacity improvements. In recent years the Highway Department has made improvements to several local roads as shown in the Table 5-11.

Local road maintenance is an important issue in Barrington. Since 1978, the Town Road Agent and the Highway Department have prepared a 10-year roadway and bridge maintenance program for Class V local roads. This program is reviewed and updated on an annual basis.

In 1994, the town developed a Road Surface Management Plan<sup>2</sup>. This plan has encouraged a change in policy from chip seal and sand style maintenance on hard surfaced roadways in favor of a more durable shim asphalt overlay. Where significant rehabilitation is required, the road is broken up or scarified and replaced with a gravel base and asphalt pavement overlay. Several roadways listed in the Road Surface Management Plan have been completed.

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<sup>2</sup> The Plan was developed with the assistance of the Technology Transfer Center at UNH and is based on the Road Surface Management System model developed by the Center to assist communities in establishing roadway maintenance programs.

<b>Table 5-11 Roadway Work by the Barrington Highway Department, 1995-2002</b>	
<b>Road</b>	<b>Type of Work</b>
Hall Rd. (Beauty Hill to France Rd.)	Reclaimed and tarred
Young Rd. (from Rt. 9 to Woods Rd)	Shimmed and overlaid
Waterhouse Road	Tarring
Canaan Road	Tarring
Woods Road (section)	Tarring
Tolend Rd to Green Hill Rd.	Reclaimed and tarred
Beauty Hill Road	Tarring
Hall Road	Paving from France Rd. to Route 4
Woods Road	Shimmed and overlaid section
Fogarty Road	Shimmed and overlaid section
Commerce Way	Shimmed and overlaid section
Juniper Road	Shimmed and overlaid section
Waterhouse Road	Shimmed and overlaid section
Mahala Way	Shimmed and overlaid section
Stepping Stone Road	Shimmed and overlaid section
Scruton Pond Road	Sand Sealed
Cate Road	Sand Sealed
Brewster Road	Sand Sealed
Smoke Street	Sand Sealed
Crissy Circle	Sand Sealed
<i>Source: Barrington Annual Town Reports</i>	

The Highway Department targets four to five roadways each year for improvements based on an annual assessment of all road conditions. In the current year's program the Department is planning work on a portion of Beauty Hill Road, a portion of Tolend Road, Oak Hill South, Province Road, France Road, and Scruton Pond Road. The Department recently completed work on Hull Road

### **Regional Transportation Improvement Plan**

The Transportation Improvement Plan (TIP) is a prioritized, multi-year program for the implementation of transportation improvement projects throughout the region. As such, it serves as a management tool to ensure the most effective use of limited funding for transportation improvements. It is also necessary for two other reasons. First, the TIP is a requirement of the transportation planning process as most recently legislated by the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21). Secondly, a local transportation improvement is not eligible for federal funding unless it is listed in the TIP.

The State of New Hampshire also has a Transportation Improvement Plan. This is a 10-year plan with local, regional and statewide projects included. The most recent plan does not include any specific projects for Barrington over the next 10 years.<sup>3</sup> However, there are several projects in the region that are of interest to Barrington. Most notably, is the construction of Exit 10 and

<sup>3</sup> The most recent New Hampshire 10-Year Statewide Transportation Plan is dated January 6, 2003 as a Draft

easterly connection to the Spaulding Turnpike. The state has partially completed the design and ROW acquisition for the project and is scheduled to have the project constructed by the end of 2013.

## 9. Transportation/Land Use Policy & Regulations

Existing transportation related regulations and policies are contained primarily in the town's zoning ordinance, site plan review regulations, subdivision regulations and general ordinances. Figure 5-1 illustrates existing regulations in a graphic format and Figure 5-2 illustrates possible revisions or additions to existing transportation related regulations and policy (located at end of this chapter).

### Zoning Ordinances

The Barrington Zoning Ordinance designates all land with legal frontage on Routes 4, 9, 125, 126, 202, and 202A as being part of the Highway District. This is a cumulative zoning district in that all residential uses allowed in the General District as well as most commercial and light industrial uses are expressly permitted. Dimensional requirements ensure wide frontages and large lots for both residential and commercial uses. There are also several performance standards to address impacts of adjacent and potentially incompatible uses. Properties located along Route 125 are also subject to additional requirements under the Route 125 Overlay District. Specifically, the minimum setback is extended to 100 feet and a 50-foot greenbelt must be maintained along the edge of the Route 125 right-of-way (ROW).

As more commercial and residential development occurs along the town's major roadways, the concern over traffic congestion and safety grows. The existing zoning regulations (both in terms of dimensional requirements and permitted uses) make it difficult to prevent strip development and manage access to these highways in a coordinated fashion. Existing Highway District regulations encourage development to be spread out (or linear) rather than channeled to key intersections (or nodes) along these corridors where traffic circulation and access can be better controlled, design guidelines can be effective, and walking between building can be safe and a legitimate alternative to driving. Additionally, by clustering a mix of uses in smaller nodes, commercial businesses can be more profitable, and vehicle trips are linked rather than several trips (and turning movements) onto busy highways.

Like many rural and resort communities in New Hampshire, the Barrington Zoning Ordinance includes a Class Six Road Overlay District which authorizes the Selectmen to decide when to issue building permits on these roadways that are not maintained by the town. Each applicant must meet the requirements of the Policy of the Board of Selectmen regarding construction on Class VI and private roads that includes signing an agreement stating that the town is not responsible for maintenance or liability for any damage resulting from use of the road and that this agreement is recorded with the registry of deeds. The Selectmen's Policy describes a similar process and agreement for building on private roads.

## Subdivision Regulations

Barrington's roadway design standards are included in the subdivision regulations and contain minimum roadway material requirements and other design elements such as curbing, sidewalks, bikeways and street trees. Roadway standards are established to provide safety travel conditions. The purpose in the regulations is also to ensure that public roads are compatible with existing streets, and to rationalize traffic patterns within new subdivisions. In addition to Subdivision Regulations, additional road design standards for Class VI and Private Roads are provided in the Selectmen's Policy.

Generally, the roadway requirements in the Subdivision Regulations are well thought out and consistent with community character and values.

While it's not unusual for new residential access roads in Barrington to be built to a higher standard than the collector roads they feed into, in some cases the width of these new streets may be unnecessary and could potentially diminish the rural character of the community. However, provisions are made in the regulations for width reductions. In considering roadway width reductions, the Planning Board should consider safety, parking, pedestrian circulation, scenic quality and other factors deemed to be in the best interest of the community.

The Planning Board has instituted a policy of roadway assessment as a condition for subdivision approval in locations where the Board has determined that the increased traffic will have a significant impact on the adjacent roadways. In essence, this assessment is based upon the application of a unit cost of maintenance per foot for the existing town road to the amount of frontage in the subdivision. These funds are retained in a separate escrow account until such time as the town requires pavement upgrade. At present, there are approximately 10 such accounts.

Additional requirements for streets and sidewalks include the following.

- Two access points are allowed only when there is 300 feet of frontage
- Driveways must be at least 100 feet from street intersections where possible
- Common driveways may be utilized, but for no more than two homes unless a waiver is granted and the driveway is built to town specifications
- Scenic Road access must preserve and maintain significant stone walls and trees. The Conservation Commission must approve any plans if they involve removal or relocation of stone walls and trees.
- Sidewalks and/or bikeways shall be provided where appropriate. The Planning Board will consider proximity to schools, commercial destinations, and other sidewalks or bikeways.

## Site Plan Review

Site Plan Review is required by the Planning Board for any new or expanded nonresidential use or multifamily use. The stated purpose of the regulations is to provide for safe and attractive development. The site plan process may include a non-binding design review to address more specific design, planning and engineering details of a project. Key design and construction

standards of the Site Plan Review Regulations pertaining to traffic and circulation are the following.

- The side used for frontage requirements must also be the point of access
- Driveway permits must be obtained from NHDOT for access to state roads and the Barrington Road Agent for local roads.
- Driveways must be 50 feet from any intersecting street or other driveway
- Shared driveways are allowed to reduce curb cuts
- Curbing may be required to improve traffic control and safety
- Projects creating 10,000 or more square feet must prepare a traffic impact analysis
- On site parking requirements use generally accepted standards which may be adjusted for a given project by the planning board
- Shared parking is encouraged where feasible
- Minimum dimensional requirements for parking spaces and lots are reasonable and well defined.
- Additional standards are provided for handicapped parking, traffic control islands, curbing, directional signage, curbing, pavement, parking location, off-street loading
- All sites must have sidewalks from the main entrance to the parking lot (as applicable) and lockable bicycle parking/storage

The Site Plan Review Regulations also contain Sign Regulations for the Highway Districts (See Table 5-12). Free standing sign regulations permit large business signs along the town's major corridors.

<b>Table 5-12</b>				
<b>Freestanding Sign Regulations in the Highway Districts</b>				
<b>Highway District</b>	<b>Area (SF)</b>	<b>No. Per Lot</b>	<b>Setback</b>	<b>Height</b>
Routes 125 & 4	96	2	15	24
Routes 202, 202A, 126 & 9	32	2	15	12
<i>Source: Barrington Site Plan Review Regulations</i>				

On Routes 125 and 4, two free standing signs are permitted on each lot to a height of 24 feet. As the corridor begins to develop, the cumulative effect of multiple, large free-standing signs could present the appearance of strip development.

## **General Ordinances**

A number of local ordinances have been adopted relating to Barrington's roadways. These include establishing speed zones, winter parking restrictions, and specific locations for stop signs. The Road Agent is responsible for granting driveway permits. The guidelines for these applications are based on criteria outlined in RSA 236:13-1.

## 10. Future Transportation Issues

### Growth in Traffic

Traffic continues to grow throughout the community. Traffic recorders (both permanent and non-permanent) indicate increases on Barrington's major arterials as well as local collectors. In some cases, annual traffic volume increases have been significant on local roads such as 2<sup>nd</sup> Crown Point Road, Mallego Road and Green Hill Road (See Table 5-13).

Existing traffic volumes by **Land Use Area** in Barrington are estimated by determining the number of homes (both seasonal and year-round), and applying an average number of trips per day. According to accepted transportation standards, the average household generates about 10 vehicle trips per day<sup>4</sup>. (For the purposes of this estimate only two trips per day were assigned to seasonal homes). This traffic model illustrates in Table 5-14 that the highest number of existing vehicle trips are being generated by Land Use Areas 5, 8, and 9 (located in the central and southern portion of town) with 4,000 to 5,000 trips per day.

<b>Table 5-13 Average Annual Traffic Increases from Non Permanent Recorders 1990-1999</b>	
<b>Traffic Count Location</b>	<b>% Inc.</b>
NH 9 @ Madbury TL	1.2%
Green Hill Road over Isinglass River/east of US 202	11%
2nd Crown Pt. Rd. w. of Pond Hill	7%
NH 125 S of NH 9	5%
Province Rd. west of NH126	3.3%
Mallego R. over Mallego Brook	11%
NH 125 North of Lee Oak/ (1999) North of Beauty Hill Road	2.6%
NH 9 west of NH 125	2.6%
<i>Sources: NH Dept. of Transportation, SRPC</i>	

Projections for future vehicle trips in each of the LUAs were calculated by determining the amount of housing growth between 1990 and 2002 and projecting it forward over the next seven years to 2010. In determining the number of future vehicle trips, low and high estimates were made based on projections by Land Use Area as outlined in Chapter 4 - Land Use.

These projections show again that LUAs 5,8 and 9 are expected to represent the largest increase in vehicle trips over the next seven years. Overall, residential vehicle trips per day are projected to increase between 3,356 and 5,095. This represents an 11% to 17% increase in residential traffic assuming no significant change in the amount and type of commuting by local residents (See Table 5-14).

The implications of projected residential traffic growth must be considered when planning for future transportation improvements. Particular attention should focus on the potential impacts of traffic in the central and southern portions of town where significant residential development is occurring. Anticipated impacts on arterial and local collector road conditions, intersection safety, and the amount of Class V and private roads serving these high growth areas need to be carefully monitored for potential safety and capacity improvements.

<sup>4</sup> The Institute of Transportation Engineers (ITE) Trip Generation Manual was used to determine the estimated number of vehicle trips per household per day.

**Table 5-14**  
**Estimated and Projected Traffic & Circulation by Land Use Area**

Category	1	2	3	4	5	6	7	8	9	Total
Total Land Area	3,867	4,094	2,183	3,536	2,988	3,286	3,335	2,365	4,160	29,814
Developed Land	633	1,171	492	545	1,054	985	342	1,010	840	7,072
Undeveloped Land	3,233	2,923	1,691	2,991	1,934	2,300	2,993	1,354	3,320	22,739
Total Housing Units, 1990	272	362	137	286	258	315	68	471	471	2,640
Total Housing Units, 2002	405	416	162	307	422	394	105	593	505	3,309
Year-Round Homes, 2002	286	401	157	248	417	384	97	435	493	2,918
Seasonal or Vacant, 2002	119	15	5	59	5	10	8	158	12	391
Annual Growth 1990-2002	12%	10%	10%	9%	14%	10%	13%	10%	9%	11%
Total Interior Road Mileage	19	17	9	13	15	10	4	18	14	117.5
Class I	0.5	-	-	-	2	-	-	-	1	3.5
Class II	-	-	-	-	1.5	-	-	-	-	1.5
Class V	7	10.5	4.0	4.5	5.5	5	-	4	4	44.5
Class VI	1	2.5	3.0	1.0	1.5	2	2	-	6	19.0
Private	10	4	2.0	7.0	4	3	2	14	3	49.0
Estimated Current Daily Trips	3,098	4,040	1,580	2,598	4,180	3,860	986	4,666	4,954	29,962
Projected Housing Growth										
2010 Low Estimate (%)	18%	7%	9%	4%	22%	11%	20%	11%	4%	12%
2010 High Estimate (%)	28%	11%	13%	6%	33%	17%	30%	18%	6%	18%
Projected Daily Vehicle Trips										
2010 Low Estimate	3,664	4,331	1,717	2,700	5,091	4,291	1,183	5,201	5,140	33,318
2010 High Estimate	3,962	4,487	1,785	2,750	5,557	4,516	1,277	5,484	5,238	35,057

Source: US Census, Barrington municipal assessment records, RKG Associates, ITE Trip General Manual

## Town Center Development

The *Barrington Open Space, Recreation, Town Center Plan, 2001* identifies the area centered on the Route 125 and Route 9 intersection as a selected location for a new Town Center. The goal of the new center is to create “a place where the community can gather for special events, entertainment, recreation, have basic services such as a post office, schools, playgrounds, churches, restaurants, and commercial offerings. The center should be cohesive, compact, and characterized by the scale and architecture of a traditional New England village.”

There are several transportation design issues that are associated with the town center concept that are critical to making this plan attractive and functional. Some key considerations include the following.

- Traffic calming treatments to the intersections such as center landscaped islands, raised cross-walks, pedestrian signal phases, pedestrian refuges, and curb extensions.



- Shared access driveways at a safe distance from the intersection
- Locating parking behind new buildings or on side streets. Providing shared parking and circulation plans between properties.
- Attractive and visible gateway and directional signage
- A connected pedestrian and bicycle network between buildings and to nearby public and private places.

### **Corridor Access Management**

The current zoning regulations for the major transportation corridors in Barrington facilitate linear development where uses and buildings are stretched out along the length of the roadway. This pattern of development creates a strong dependence on the automobile resulting in more traffic congestion and safety concerns on major arterials that is becoming more difficult to manage. An alternative to linear development would be nodal development where development is concentrated at key centers (such as intersections) along the corridor, which improves safety, facilitates walking and biking, preserves open spaces, and strengthens business development.

### **Limited Traffic Distribution & Circulation**

Several Class VI roads in Barrington serve as potential inhibitors to effective traffic distribution and circulation. While many of them are scenic and provide important passive recreational opportunities, they limit travel options and result in funneling traffic into a limited number of roads causing potential intersection overload. Class VI roads with potential for improving circulation town-wide include the following.

- Swain Road
- Winkley Pond Road
- Old Province Road
- Smoke Street
- Berry Road
- Hansonville Road
- Town Farm Road
- Wildcat Road
- Longmarsh Road
- Lee Road

The Highway Department favors the conversion of Lee Road, from Beauty Hill Road to Province Road, for upgrading to Class V status in order to improve circulation, improve emergency response time, and lessen problems with the Beauty Hill/Route 9 intersection. Other Class VI roads that should be considered for upgrade to Class V in the future include Swain Road, Wildcat Road, and Berry Road.

### **Paved vs. Dirt/Gravel Roads**

Dirt and gravel roads can have a wide range of serviceability. A well-graded road, with adequately drained base material and good roadside drainage can last indefinitely. However, maintenance increases with vehicle volume, size and speed, severe weather, as well as a number

of other factors. Paving roads may dramatically reduce the frequency of maintenance, but higher material costs must be weighed in a life-cycle cost-benefit analysis.

Before considering paving a road all costs and benefits should be weighed. To keep these costs as low as possible every resource should be explored for ensuring that the best management and construction techniques are used. The decision to pave a dirt road needs to be made on a case-by-case basis, as many factors may be relevant. Factors to consider include the following.

- Cost – This may include many possible factors such as road construction & maintenance costs as well as user maintenance costs. For example - all other considerations being equal - a paved road might have the same cost-benefit, as a gravel road if re-grading is required 6-8 times a year<sup>5</sup>.
- Traffic volume – The relationship of volume and cost is clear from the perspective of wear and tear on materials. However, paved roads can lead to higher traffic volumes if speeds increase and shorter travel time result. Additional considerations include emergency access requirements, potential for future development, and how paving may affect these entities. Generally, roads, which have reached a traffic level of 300-500 cars per day, can be candidates for paving.<sup>6</sup>
- Aesthetics/Nuisance – Tangible qualities to consider may include proximity to development and its relationship to dust, speed, noise, vibration, and the affects of periodic maintenance.
- Steepness of grade – A dirt road will wash-out more frequently and/or require more grading to compensate for, or avoid, such occurrences as the profile grade increases. The steeper the road grade, the less effective the cross slope is at getting the stormwater off the road, and runoff will tend to wash longitudinally.
- Environmental – Sediment and erosion concerns are also higher on dirt roads, especially if the road is near a sensitive aquatic resource.
- Community Character – For Barrington, preserving the community's rural character is an important consideration and many residents feel that unpaved roads exemplify this rural character and compliment the natural scenic beauty that is so abundant throughout town.

### Development on Class VI & Private Roads

For several years, buildings have been allowed on Class VI and private roads under the Zoning Ordinance. The residents of all new homes built on Class VI or private roads in town must sign an agreement waiving the town's responsibility for improvements and maintenance. This requirement is consistent with RSA 674:41. According to the Highway Department this agreement has worked well to protect the town from maintaining roads in poor condition. Presently, there are no requests or petitions from residents living on Class VI or private roads to upgrade them to Class V. However, as more residents settle on these roadways it is anticipated that the possibility of petitions for town acceptance and upgrade to Class V will become more

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<sup>5</sup> Assumes equipment operating cost of \$150/hr., \$100/ton for asphalt.

<sup>6</sup> Vermont Roads Program (LTAP)

common in the future. Particular attention should be given to the southern portion of town around Swains Lake and Mendums Pond where high residential growth has occurred and where there is a significant amount of Class VI and private road mileage.

An additional issue is that there are numerous homeowner associations in town established to maintain Class VI and private roads. However, there is no obligation for residents to join or pay dues, requiring maintenance to be carried out by those who choose to contribute to the cost.

### New Development

Residential development has an impact on local roads and intersections. Recent subdivisions on Scruton Pond Road and Tolend Road, and proposed subdivisions on Province Road near the Golf Course should be evaluated closely for impacts on surrounding roads and intersections. New residential developments must provide Class V roads. The town requires a bond for construction of which 20% is retained for two years for interim maintenance. The town also has an impact fee system, which may require new homes to contribute funds that are used for off-site road improvements in the area. Separate funds have been created for different areas of town, which must be spent within seven years.

### Emergency Response & Access

According to the town's emergency services there are a number of areas and roadways in Barrington that are difficult to access. For example, private roads are generally not maintained in the winter to the same quality as they are in the summer, which creates problems for emergency access. Of particular concern is Berry River Road, which may take as long as 20 minutes to respond to due to poor road conditions and distance from the Public Safety Complex. This is an area where a number of seasonal cottages are being converted to year-round residences as well as high summer activity and use. The roadway is very narrow and upgrading it would be very difficult due to tight conditions. Areas off Swain Road and Province Lane are also a concern to emergency services. It has been estimated that if Swain Road were accessible that as much as 10 minutes might be saved in responding to emergencies in areas that are currently very difficult to access.

<b>Table 5-15 Area Emergency Response Assessment*</b>			
<b>Location</b>	<b>Mileage</b>	<b>Time (Min.)</b>	<b>Est. MPH</b>
End of Long Shore Road	7.9	18	26
End of Mendums Landing	9.1	9	61
Nippo Lake Golf Course	4.8	6	48
Canaan Road at Strafford T/L	7.9	11	43
Pumpkin Hollow Trailer Park	4.1	6	41
End of Steppingstone Rd. at Not. T/L	6.1	8	46
Wood Rd at Nottingham T/L	8.1	13	37
End of Barry River Rd. to end of L.S.	3.2	13	15
Stone House Pond	6	9	40
* Barrington Police Dept. assessment starting at Rt.. 125/9 intersection and based on average time without emergency lights or sirens			

Private roads that pose problems for the town in terms of emergency access, poor conditions or design are the following:

- Berry River Road - Designed for seasonal use but now being used by many year-round residences
- Barrington River Road - Shore area is long and narrow
- Longshore Drive
- Holiday Lake Shore
- New Bow Lake Road
- Swains Lake – Very Narrow
- Birch Lane
- Baxter Lane
- Castle Rock Road

### **Conversion of Seasonal to Year-Round Homes**

According to local officials, the conversion of seasonal homes along the ponds and lakes of Barrington to year-round housing is perceived to be extensive throughout town. Most of these residences are on private roads, which would be difficult to upgrade because they are often narrow and hemmed in by trees and seasonal residences. The town requires a 50 foot right-of-way for public roads and, in most cases, only 30 feet would be available. In addition to emergency access issues identified above, there are also potential environmental concerns and traffic issues on nearby public roads and intersections.

### **Pedestrian & Bicycle Mobility**

Currently, there are no sidewalks in Barrington although they are an optional requirement in the Subdivision Regulations. The Highway Department does not favor sidewalks because of the lack of equipment to properly maintain them and, instead, prefers a 24-foot wide roadway with a 4-foot shoulder on new roads where pedestrian activity is expected to warrant it's need.

There are no formally designated trails in town with the exception of the recently approved Class B trail designations of French Road Extension and Tibbetts Road through the Tamposi Property. A new trail group has formed in town but no trails have been created to date. With an extensive network of Class VI roadways in Barrington, many local residents use these roads for passive recreational purposes such as walking, hiking and biking.

Pedestrian safety is an important concern and sidewalks should be considered in key locations in Barrington. If they are to be required by the Planning Board the following criteria should be considered.

- Sidewalks should be located on both sides of all arterial streets
- If the street is within one-half mile of any public school sidewalks should be provided
- Sidewalk design should be varied in horizontal layout and location to enhance aesthetic value
- Sidewalks should be located at or near the outside of a street right-of-way to maximize pedestrian-vehicular separation achieved by either distance or plantings

Public bicycle paths may be required by the planning board to provide circulation or access to schools, recreational areas, retail facilities, transportation and community facilities, or where bicycle travel in the streets would be dangerous.

**INSERT – Figures 5-1 (FRONT PAGE) Transportation related regulations and potential design options**

**INSERT – Figures 5-1 (BACK PAGE)**

**INSERT – Figures 5-2 (FRONT PAGE) Transportation related regulations and potential design options**

**INSERT – Figures 5-2 (BACK PAGE) Transportation related regulations and potential design options**